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SEPARATION OF *HABER SPECIOSUS* (HRABĚ) (OLIGOCHAETA: TUBIFICIDAE) FROM ITS CONGENERS, WITH A DESCRIPTION OF A NEW FORM FROM NORTH AMERICA

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Abstract.—The diagnosis of *Haber* Holmquist is expanded to include species of previously questionable position. The members of this genus are unique among the Tubificinae in possessing similar penial and spermathecal setae and have characteristic genital morphology. *Haber* now includes eight species: *H. speciosus* (Hrabě), *H. dojranensis* (Hrabě), *H. monfalconensis* (Hrabě), *H. amurensis* (Sokolskaja and Hrabě), *H. pyrenaicus* (Juget and Giani), *H. turquini* (Juget and Lafont), *H. hubsugulensis* (Semernoi and Akinshina), and *H. svirenkoi* (Lastockin). *Haber simsi* (Brinkhurst) is confirmed to be a synonym of *H. speciosus*. Based on setal morphology, *H. speciosus* is separated into four forms: speciosus, zavreli, simsi and fluminialis. This complex is compared to all congeners.

Until Brinkhurst (1981) recorded the first appearance of *Haber* in the state of New York, this genus was only known from localities in Europe. Subsequent material from Maryland, South Carolina, and Florida indicates that this genus, represented by a single species, is well established in extreme upper estuarine locations along the eastern seaboard and Gulf of Mexico in North America. Eight species have been incorporated into the genus *Haber,* some based on incomplete descriptions. The species are: *H. speciosus* (Hrabě, 1931), *H. svirenkoi* (Lastockin, 1939), *H. dojranensis* (Hrabě, 1958), *H. monfalconensis* (Hrabě, 1966), *H. amurensis* (Sokolskaja and Hrabě, 1969), *H. pyrenaicus* (Juget and Giani, 1974), *H. turquini* (Juget and Lafont, 1979), and *H. hubsugulensis* (Semernoi and Akinshina, 1980). Holmquist (1978) established the genus (*Haber*) to accommodate those Tubificinae previously identified as either *Peloscolex* or *Tubifex* sharing the unique combination of similarly shaped penial and spermathecal setae, and an "apparent" penis sheath. Early descriptions of many of these species described a "cuticular penis sheath." Holmquist (1978) has shown, through the analysis of serial sections, the structure actually to be a thickened basement membrane, not of cuticular origin, surrounded by epithelial cells, which acts as an attachment for the musculature of the penial apparatus. Two forms of *H. speciosus* (zavreli and simsi) were once regarded as distinct species, but Hrabě (1981) regarded zavreli as a subspecies of *speciosus*; he placed both in the genus *Tubifex*. Brinkhurst and Jamieson (1971) had synonymized both plus the subspecies *monfalconensis* with *H. speciosus*. The most recent account by Brinkhurst and Wetzel (1984) suggests that some species in the genus (including *zavreli* and *simsi*) would not survive a revision, but their status was left in doubt. Holmquist (1979) elevated *monfalconensis* to specific rank, along with *speciosus* and *zavreli,* but she indicated a possible relationship between *simsi* and *speciosus* based on the single specimen of *simsi* available at that time. She listed other

possible *Haber* species as *dojranensis* Hrabě, *amurensis* Hrabě and *svirenkoi* Finogenova.

The North American forms are herein described and compared with their congeners.

Materials and Methods

Samples were collected from the Head Springs region of the Crystal River as part of a study of estuaries on the west coast of Florida sponsored by the Southwest Florida Water Management District. Samples were taken using a 12.5 × 12.5 × 20 cm diver operated core. A 15% solution of magnesium sulfate was added to narcotize the animals. The samples were subsequently sieved through a 0.5 mm mesh screen, fixed in formalin with Rose Bengal stain, then transferred to 70% isopropyl alcohol. The preserved worms were sorted from the residue and mounted on microscope slides in Amman's lactophenol. Additional specimens were stained in Grenacher's alcohol borax carmine, cleared in terpineol, and either dissected or mounted whole in Canada balsam. Measurements referred to in the description were taken from fixed, mounted worms. Representative material has been deposited in the United States National Museum of Natural History, Washington, D.C. (USNM).

Specimens of *Haber* from South Carolina collected by Dr. Dale Calder were supplied to me courtesy of Dr. R. O. Brinkhurst. These worms were stained with Rose Bengal and mounted whole in Canada balsam. Material from Maryland was received courtesy of Mr. Michael T. Barbour (EA Engineering, Science and Technology, Inc.). Specimens from New York identified as *Haber* cf. *speciosus* by Dr. Brinkhurst were received courtesy of the USNM. The Maryland and New York material was mounted whole and cleared in CMC-10. Specimens of *Haber* from England were mounted in polyvinyl lactophenol and provided by Dr. Michael Ladle (Freshwater Biological Association, England).

Systematics

Haber Holmquist, 1978

Definition (modified).—Limnetic tubificids. Dorsal bundles include smooth or hispid hair setae, and bifid or pectinate crotchets. Somatic ventral setae all bifid crotchets. Body wall usually smooth, without adherent foreign particles. Male and spermathecal pores paired. Coelomocytes absent or inconspicuous. Modified spermathecal and penial setae present: thin and hollow-tipped, inserted in glandular sacs. Vas deferens long, bipartite in some species, entering ental portion of atrium apically. Glandular prostate present, attached to atrium medially in most species. Ectal region of atrium often modified into narrow ejaculatory duct. Penial pouch present. Cuticular penis sheath absent. Thick basal membrane resembling a penis sheath lining internal canal of penis. Male pore and penial setal sac with common opening. Spermathecae bipartite: ectal narrow canal; entally, elongate ampullae. Spermatozeugmata vermiform.

Type species.—*Tubifex speciosus* Hrabě, 1931.

Remarks.—The presence of modified penial setae has been reported in only two tubificine species, *Tubifex nerthus* Michaelsen, and *T. thompsoni* Southern, other than those now considered in the genus *Haber*. Brinkhurst and Baker (1979:1554) determined the penial setae reported in a single specimen of *T. nerthus* from Europe probably to be "no more than broken somatic setae." *Tubifex thompsoni,* synonymized with *T. costatus* by Brinkhurst (1963), has been reported as having unmodified penial setae according to Holmquist (1979). However, the morphology of the male efferent duct and the presence of palmate setae precludes any relationship to the *Haber* group, and the penial setae may simply be bifids

retained. *Tubifex costatus* was described as lacking penial setae (Brinkhurst and Baker 1979).

General Remarks.—Eight species are included in this genus as suggested by Holmquist (1978) and Brinkhurst (1981, 1984) based on the presence of penial and spermathecal setae inserted in a glandular sac. These species are separated primarily by the morphology of the male genitalia. Secondary characters are setal morphology, position of the spermathecal pore, and modifications of the body wall.

Distribution.—North America, Europe.

Haber speciosus (Hrabě, 1931)

Tubifex (*Tubifex*) *speciosus* Hrabě, 1931: 24–27; 1964:108.

Peloscolex zavreli Hrabě, 1942:23–26.—Brinkhurst, 1963:41, (equals *Peloscolex speciosus* (Hrabě), Brinkhurst, 1971:514).

Peloscolex speciosus (Hrabě), Brinkhurst, 1962:304–305; 1963:43; 1966:735 (partim).—Brinkhurst and Jamieson, 1971: 514–515.

Peloscolex simsi Brinkhurst, 1966:735–736 (equals *Peloscolex speciosus* (Hrabě), Brinkhurst, 1971:514).

Tubifex speciosus speciosus (Hrabě), Hrabě, 1966:68–70.

?*Peloscolex zavreli* Hrabě, Kasprzak, 1973: 421–422.

Haber speciosus (Hrabě), Holmquist, 1978: 188, 191, 193, 195, 196, 200, 201, 203, 204, 206; 1979:51, 52, 58.—Brinkhurst, 1984:52.

Haber simsi (Brinkhurst), Bird and Ladle, 1981:493–498.

Haber cf. *speciosus* (Hrabě), Brinkhurst, 1981:1062–1064.

Tubifex speciosus zavreli Hrabě, Hrabě, 1981:87.

Type material.—1593-10-P-II Hrabě Oligochaeta collection, from Ochrida Lake, Yugoslavia.

Material examined.—NEW YORK: One wholemounted specimen from Susquehanna River, 4.6 kilometers upstream of railroad bridge, above Gaudey Generating Station, Binghamton, New York, shallow riffle, large cobbles, USNM 065223; collector, Kurt Stimpson, 2 Aug 1976. MARYLAND: 7 wholemounted specimens from Piscataway Creek, tributary of Potomac River south of Washington, D.C., 1 m, tidal freshwater marsh, sandy silt; collector, Michael T. Barbour, May–June 1983. SOUTH CAROLINA: 9 wholemounted specimens; 7 from upper estuarine region of Black River, 5 m, sand, 5 Apr 1977, 2 from upper estuarine region of Pee Dee River, 3 m, sand, collector, Dr. Dale Calder; 5 Jan 1977. FLORIDA: 30 wholemounted specimens, 3 dissected specimens, Head Springs region of Crystal River off Banana Island, Crystal River, 1 m, medium clean sand; collector, Michael R. Milligan, Feb–Nov 1984. ENGLAND: 2 wholemounted specimens from Bere Stream, tributary of River Piddle, Dorset, stream bed with corase flint gravel and sand; collector, Michael Ladle, 27 Oct 1980.

Diagnosis (combined from literature and current studies).—Length (fixed, wholemounted, complete specimens) 10–15 mm, width at clitellum 0.15–0.4 mm (Table 1). Body wall generally naked. Clitellum covering X–XII. Preclitellar dorsal bundles with 1–3(4) smooth or hispid setae 150–290 μm, and 1–4(5) pectinate setae 25–65 μm with maximally 8 intermediate teeth, nodulus distal. Postclitellar dorsal bundles with 1(2) hair setae 95–442 μm, and 1(2,3) bifid or pectinate setae 35–52 μm (Table 2). Pectinate setae with maximally 3 intermediate teeth. All somatic ventral setae bifid. Preclitellar ventral setae with upper tooth as long as or longer, and thinner than, lower tooth, 3–8 per bundle 35–65 μm (Table 2). Postclitellar ventral setae generally with upper tooth as long as, and thinner than, lower tooth, 1–3 per bundle 43–62 μm (Table 2). Spermathecal and penial setae thin, hollow-tipped, embedded in glandular sac, gener-

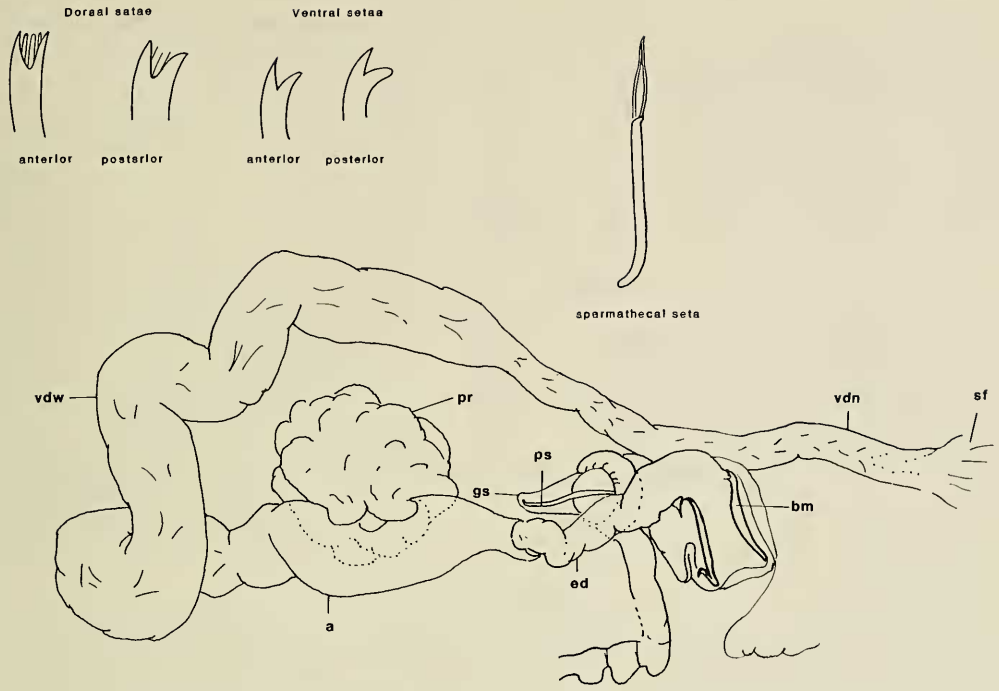


Fig. 1. Male efferent duct and characteristic setae of *Haber speciosus*, simsi form, from Florida. Abbreviations: a, atrium; bm, basement membrane; gs, glandular sac; pr, prostate gland; ps, penial setae; sf, sperm funnel; vdn, vas deferens, narrow part; vdw, vas deferens, wide part.

ally of equal length 42–70 μm (Fig. 1). Spermathecal pore dorsal to ventral seta. Male funnel small. Vas deferens, long, bipartite. Thinner ental half 16–25 μm wide, ciliated, distinctly separated from wider ectal half 38–45 μm wide. Ectal region partly or wholely ciliated, enters atrium of similar width. Glandular prostate attached medially to relatively elongate, spindle-shaped atrium (Figs. 1–2). Ejaculatory duct present, terminating in bulb-like penial apparatus. Basal membrane lining the penial canal forming a tube longer than wide. Canal of spermatheca c. 20 μm wide and c. 100 μm long; ampulla c. 100 μm wide, length variable.

Remarks.—This species can be divided into four distinct "forms" based on setal morphology: speciosus, zavreli, simsi, and fluminialis form. Differences between the male efferent ducts of the different forms are insufficient to warrant separation as distinct species. The differences are summarized in Tables 1 and 2. The term "subspecies" usually refers to a geographic race differing slightly from another group of the same species (Steen 1971). Form is more appropriately applied to the variants of *H. speciosus* since the variations observed may be attributable to changes in the environment, primarily conductivity (Brinkhurst, pers. comm.), not necessarily due to geographic isolation.[1]

Two of these forms have only been collected from Europe: the speciosus form from

[1] According to Article 45g(i) of the 1985 International Code of Zoological Nomenclature adopted by the XX General Assembly of the International Union of Biological Sciences, a new name proposed as a form after 1960 is infrasubspecific and not officially recognized.

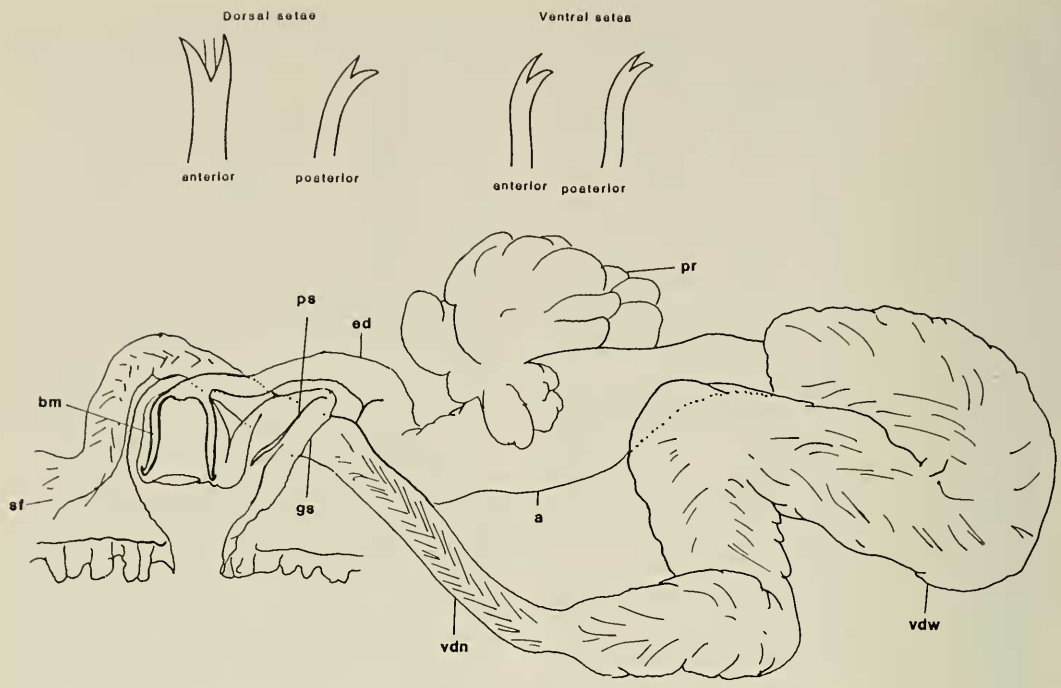


Fig. 2. Male efferent duct and characteristic setae of *Haber speciosus,* fluminialis form, from South Carolina. Abbreviations as in Fig. 1.

Ochrida Lake, Yugoslavia, and the zavreli form from Poland and Slavakia. In the original description of *Haber speciosus* (Hrabě, 1931) Hrabě referred to glandular hypodermal swellings on the body wall. This character was absent from the types Holmquist (1979) examined. However Holmquist (1979) does report the body of *H. speciosus* and *H. zavreli* to be finely ringed post-clitellarly. Hrabě (1981) regarded the latter to be a subspecies of *H. speciosus.*

The simsi form has been found on both sides of the Atlantic: two streams in Dorset, England, and the Head Springs region in Crystal River, Florida. Brinkhurst (1966) described *simsi* as a separate species of *Peloscolex,* synonymized it with *speciosus* in 1971, and subsequently transferred it to the genus *Haber* (Brinkhurst 1981) as one of a string of possible species. Bird and Ladle (1981) redescribed *H. simsi.* None of the previous references described the male efferent ducts. Bird and Ladle (1981) cleared their material in polyvinyl lactophenol. Consequently, a description of the internal male genitalia is not possible. However, from examination of their specimens, all observable characters agree with the specimens from Florida, which have been determined to be a separate form of *H. speciosus* (Fig. 1). A few specimens from Florida and England have been found with hispid hair setae.

The fluminialis form of *Haber speciosus* was previously described as *Haber* cf. *speciosus* (Brinkhurst 1981). Examination of subsequent material from Maryland and South Carolina has determined it to be another form of *H. speciosus* (Fig. 2) unique to the east coast of the United States. The term fluminialis refers to the streams from which it has been collected.

Table 1.—Body size and setal length of the forms of *Haber speciosus*.

	speciosus	zavreli	simsi (England)	simsi (Florida)	fluminialis (New York)	fluminialis (Maryland)	fluminialis (South Carolina)
Number of segments	70	50–68	42	94–107	19*	74–80	70
Length (mm)	10	12	11	12	*	c. 15	NA
Width (mm)	0.16	0.3	0.4	0.24–0.64	0.15	0.30–0.47	0.22–0.29
Spermathecal setae (μm)	NA	62–67	>35 (broken)	46–54	60	50–72	47–67
Penial setae	NA	62–67	62	47–62	63	54–70	46–64
Dorsal crotchets (anterior) (μm)	NA	NA	65	46–59	54	55–70	44–65
Dorsal crotchets (posterior) (μm)	NA	NA	38	40–60	43	37–52	40–45
Hair setae (anterior) (μm)	290	448	300	157–250	200	205–245	137–232
Hair setae (posterior) (μm)	290	NA	362	287–442	142	147–215	95–170
Ventral setae (anterior)	NA	90	55	40–53	54	55–63	45–51
Ventral setae (posterior)	NA	c. 90	49	40–50	43	44–62	43–48

* = incomplete.
NA = not available.

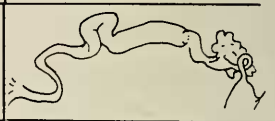
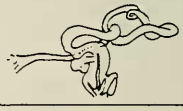
The fluminialis form is most similar to the speciosus form, but differs in number and morphology of anterior pectinate and ventral bifid setae (Table 2). It differs from the zavreli form by having an equal or slightly subequal lower tooth on all ventral setae, fewer intermediate pectinate teeth, and bifid posterior dorsal crotchets. It may be separated from the simsi form by possessing bifid crotchets instead of pectinate setae and shorter hair setae in posterior dorsal bundles.

Discussion

Separation of species within the genus *Haber* is difficult because of the extensive intraspecific morphological variation of setae. Brinkhurst and Chapman (pers. comm.) have demonstrated that a change in the conductivity of the water can alter the degree of pectination of dorsal crotchets in two unrelated tubificid species, can change the length of hair setae and cause them to have a hispid appearance, and can even remove hair setae altogether. Additional experiments have indicated that setal variations have been associated with salinity and ionic concentrations (Giere and Pfannkuche 1982). The relative length of the teeth on the crotchets may also be subject to variation due to wear (Brinkhurst 1971). Consequently, the basic criteria for distinguishing *Haber speciosus* from its congeners should be based primarily on the configuration of the male efferent ducts and secondarily on the setal shape and distribution, the latter characters being most useful in the separation of "forms" or distinct populations exhibiting the same genital morphology.

The two largest species of *Haber* are notable exceptions, because their setae are so distinct from their congeners. *Haber svirenkoi* and *H. dojranensis* are the only members of this genus lacking pectinate setae, and having the upper tooth of dorsal and ventral bifid setae much shorter than the lower. *Haber svirenkoi,* the only species (in mature specimens) lacking preclitellar hair setae, has a greater number of anterior dorsal crotchets, and is the largest (Tables 3 and 4). Although these characters distinctly separate *H. svirenkoi* from the other seven congeners, comparison of the vas deferens will further distinguish this species from *H.*

Table 2.—Distinguishing characters of the species of *Haber*.

Haber Holmquist, 1978	dorsal crotchet setae per bundle		dorsal hair setae per bundle		ventral bifid setae per bundle		morphology of male efferent ducts
	anterior	posterior	anterior	posterior	anterior	posterior	
svirenkoi Lastokin, 1937	3-7	3-7	1 (2) (from IX in immature forms)	1 (from XIII in mature forms)	3-8	NA	
dojranensis Hrabe, 1958	3-5	3-5	1	0-1	3-6	2	
monfalconensis Hrabe, 1966	1-2 (3)	1	1-2	1	3 (4)	3-2	
amurensis Sokolskaja and Hrabe, 1969	NA	NA	1-3	NA	3	2-3	NA
pyrenaicus Juget and Giani, 1974	(1) 2-5	2-3	2-3	2-3	(1,2)3-5 (6)	3-5	
turquini Juget and Lafont, 1979	1	1 NA	1(2)	1(2)	1,2,3 (4)	1,2,3,(4) NA	NA
hubsuglensis Semernoi and Akinshina, 1980	3-4	2	2-3	1-2	4-6	3-4	
"Peloscolex sp." Giani and Martinez-Ansemil, 1981	1	NA	1	1	1-2	1-2	NA

NA = NOT AVAILABLE

speciosus. The ental portion of the vas deferens in *H. svirenkoi* is narrower (c. 12 μm vs. c. 20 μm), and the ectal region is much greater (c. 40 μm vs. >65 μm) and lacks ciliation. Whereas Finogenova (1972) describes a chitinous tubular structure at the male sexual orifice, further investigation may reveal it to actually be synonymous with the basal membrane of *H. speciosus*, as indicated by Holmquist (1979).

The shape of the male efferent duct can also be used to differentiate *H. speciosus* from *H. dojranensis*. The vas deferens of the latter is of uniform width, not distinctly set off from the very narrow atrium (Table 4).

Haber speciosus can be distinguished most reliably from the remaining taxa by comparing the position of the spermathecal pore in relation to the ventral seta, and the shape

Table 3.—Size, position of spermathecal pore and type-locality of the species of *Haber*.

Species	Segment number	Length (mm)	Width at clitellum (mm)	Spermathecal pore	Type-locality
speciosus	70–170	10–12	0.16–0.47	in lateral line	Lake Ochrid, Yugoslavia
svirenkoi	180	22–38	NA	in line of ventral setae	Dnepr River, U.S.S.R.
dojranensis	140–150	20–25	NA	in line of ventral setae	Lake Dojran, Yugoslavia
monfalconensis	NA	NA	0.28	in line of ventral setae	Timova River, Europe
amurensis	NA	NA	0.44	in line of ventral setae	Amur River, U.S.S.R.
pyrenaicus	50–70	9–15	0.4–0.5	in line of ventral setae	Mountain Lakes, High Pyrenees
turquini	13–27	1–3	0.14–0.32	in line of ventral setae	Puits de Rappe, France
hubsugulensis	38	10	0.36	in line of ventral setae	Lake Khubsugul, Mongolia

NA = not available.

of the male efferent duct. The spermathecal pore is located in the line of the ventral setae in all species except *H. speciosus,* where it lies in the lateral line dorsal to the ventral seta (Table 3).

Haber monfalconensis was originally described as a subspecies of *H. speciosus* (Hrabě 1966), but Brinkhurst and Jamieson (1971) synonymized it with *H. speciosus* along with *Peloscolex simsi* and *P. zavreli.* Holmquist (1979) elevated it to species status because the position of the spermathecal pore is in line with the ventral setae. The narrow region of the vas deferens is also shorter as is the ejaculatory duct which enters the atrium more gradually (Table 4). A further separation is based on the shape of the pectinate setae. In *H. monfalconensis* the lateral teeth are acute and very long, the upper tooth longer than the lower (Hrabě 1966) (Table 4). In *H. speciosus* the lateral teeth are obtuse and of equal length (Table 3).

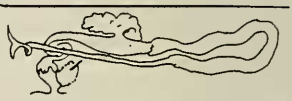
Somatic setae of *H. speciosus* and *H. pyrenaicus* are very similar. Conversely, the genital setae are distinctive. Penial setae are rarely present in *H. pyrenaicus,* and the spermathecal setae are more than twice as long (120–130 μm) as those observed in *H. speciosus.* The male genitalia of *H. pyrenaicus* are also considerably different: the vas deferens is of uniform width, the prostate is attached posteriorly on the atrium, and the ejaculatory duct is absent (Table 4). As in *H. svirenkoi,* the basal membrane of the penis may have been misinterpreted as a cuticular sheath.

The only way to separate reliably *H. speciosus* from *H. hubsugulensis* is to compare the morphology of the male genitalia. The vas deferens of the latter species is similar in shape to that of *H. speciosus,* but is approximately one-half the width. The atrium is sacciform, leading directly into a cone-shaped penis and the ejaculatory duct is absent (Table 4). Semernoi and Akinshina (1980) describe the penis of *H. hubsugulensis* as being covered by a thickened cuticle, but without a separate penial case.

Descriptions of *H. turquini* and *H. amurensis* were derived from poorly preserved material and are here only tentatively considered as distinct species. Sokolskaja (1961) briefly described *H. amurensis* as *Tubifex* sp. No. 1 from the examination of a single incomplete specimen in poor condition. The subsequent conflicting description by Hrabě (1969) as *Tubifex amurensis* was based on a single series of damaged longitudinal sections. Although the description is adequate enough to commit it to the genus *Haber,* I agree with Brinkhurst (1971) that a specific designation should be reserved until additional specimens of better quality are examined. At present, the location of the spermathecal pore in line with the ventral setae of *H. amurensis* is the only definitive character to separate it from *H. speciosus.*

The description of *H. turquini* (Juget and Lafont, 1974) omits the morphology of the

Table 4.—Distinguishing characters of the forms of *Haber speciosus.*

Haber speciosus forms	dorsal crotchet setae per bundle		dorsal hair setae per bundle		ventral bifid setae per bundle		morphology of male efferent ducta
	anterior	posterior	anterior	posterior	anterior	posterior	
speciosus	1-2	1-2	2-3	1	3-4	1-2	
simsi (England)	1-3	1	1-2	NA	3-4 (5)	2	NA
zavreli	1	2-3	2	0	2-3	NA	
simsi (Florida)	2-4	1-2	1-2 (3)	1	3-6	(1) 2-3	
fluminialis (Maryland)	2-4	1	2-3	1	4-7	(1) 2-3	NA
fluminialis (South Carolina)	4 (5)	1 (2)	2-4	1	4-8	2	
"possible congener" (New York)	1-2	1	1-2	1	4-5	2	NA
fluminialis (New York)	2-3	1	1-3	0-1	3-6	2-3	NA

NA = NOT AVAILABLE

genitalia (other than the presence of modified spermathecal and penial setae) because of poorly preserved material, but somatic characters are distinctive enough to separate it from *H. speciosus. Haber turquini* is the smallest species in this group, and the only one to have a papillate cuticle reminiscent of *Peloscolex.* The shape of the "gaine cuticulisée" covering the penis is of the form characteristic of the basal membrane in other species of *Haber,* and may prove to be the same structure upon further examination of additional material.

Two specimens of indeterminable status have been described in the literature and tentatively referred to this genus (Brinkhurst 1981; Brinkhurst and Wetzel 1984). Giani and Martinez-Ansemil (1981) collected a mature specimen, identifying it as "*Peloscolex* sp." They compared it to *H. speciosus* and *H. zavreli.* Penial setae are absent, but the penis is enclosed by a "cu-

ticular sheath" similar to *H. zavreli.* The shape of the spermatheca and spermatophore also conform to the genus *Haber.* Until conspecifics can be more thoroughly examined, this species is best left undesignated.

Brinkhurst (1981) mentioned a "possible congener" from the Hudson River, New York, of a species he referred to as *Haber* cf. *speciosus* described from the Susquehanna River, New York. The specimen was deposited in the United States National Museum of Natural History (USNM 65224) and identified as *Peloscolex speciosus.* The specimen was mounted in a clearing medium. Consequently, the genital morphology cannot be determined. However, the presence of spermathecal and penial setae suggests its placement in the genus *Haber.* The morphology of the somatic setae is different from any form thus far encountered in North America (Table 2). Examination of additional specimens will probably establish it as either a new species of *Haber* or as an additional "form" within the complex of *Haber speciosus,* most similar to the zavreli form.

As Bird and Ladle (1981) indicated, immature specimens of *H. simsi,* confirmed herein as a synonym of *H. speciosus,* may be confused with *Tubifex ignotus.* They presented a comparison between the setae of the two species, and used this character as a basis for separation. Unfortunately, due to the plasticity of the setal morphology, this distinction is unreliable. Care must be exercised when referring to the taxonomic key prepared by Stimpson and Klemm (1982) on the Tubificidae of North America. An immature specimen of *H. speciosus* will be misidentified as *T. ignotus.* Careful examination of mature specimens is essential for accurate identification.

Summary

The genus *Haber* is newly reported from eastern North America. Specimens were examined from New York, Maryland, South Carolina, and Florida, and have been determined to be the same species, *Haber speciosus,* based on similar morphology of the male efferent duct. The eight species of *Haber* are separated, primarily by differences within the male genitalia, and secondarily by setal morphology and modifications of the body wall. Four distinct forms of *H. speciosus* can be distinguished on the basis of their setal morphology. Two of these forms are represented in the North American fauna, the fluminialis form and simsi form. The former has been found only on the east coast of North America. The latter has been collected from the Gulf of Mexico, Florida, and from England. The material from England was originally described as a distinct species, *P. simsi.* The remaining two forms, zavreli and speciosus, have only been reported from Europe.

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